

U.S. Application Serial No: 10/085,469
Filed on February 28, 2002
Response dated September 8, 2006
In Response to Final Office Action dated March 10, 2006

Amendments to the Claims

This listing will replace all prior versions and listings of claims in the application:

Listing of the claims

1. (Currently amended) An activated carbon comprising:
a pore volume per gram of said activated carbon more than about 0.32 mL in the pore width range between about 4 to 63 angstroms; and
a pore volume per gram of said activated carbon more than about 0.21 mL in the pore width range between about 63 to 500 angstroms; provided that the pore volume per gram of said activated carbon in the pore width range of about 20 to 63 angstroms is at least about 25% of the total pore volume per gram of said activated carbon in said pore width range of 4 to 63 angstroms, as measured per the Argon Adsorption Density Functional Theory protocol and provided that said activated carbon exhibits a pH equal to or greater than 9.9, when immersed as a slurry in nitrogen-purged deionized distilled water, while the slurry contains about 10% by weight of activated carbon, as measured per the Slurry pH protocol;
wherein the percent volume of macropores having diameters exceeding 200 angstroms range from about 33 % to about 50 %.

2. (Original) The activated carbon according to claim 1, wherein an activated carbon contactor comprising grains of said activated carbon is capable of removing about 12,000 bed volumes or greater of ¹⁴C-methylisoborneol down to below 10 parts

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per trillion of water having about 3.5 mg/L or greater of organic matter as total organic carbon as monitored per the Standardized Mini-Column MIB Adsorber protocol.

3. (Original) The activated carbon according to claim 1 where said activated carbon is capable of removing about 7500 bed volumes of ^{14}C -MIB down to 4 parts per trillion of water having about 3.5 mg/L or greater organic matter as total organic carbon as monitored per the Standardized Mini-Column MIB Adsorber protocol.

4. (Original) The activated carbon according to claim 1, wherein said activated carbon exhibits a mobility-based zeta potential at a pH of 10.5 that does not change \pm more than 3 mV between the time that said activated carbon is exposed for about 1 hour and about 24 hours to deionized distilled water through which an excess of gaseous oxygen is bubbled, as measured per the Mobility-Based Zeta Potential protocol.

5. (Original) The activated carbon according to claim 1, wherein said activated carbon exhibits a mobility-based zeta potential at a pH of 10.5 that does not change \pm more than 17 mV between the time that said activated carbon is exposed for about 1 hour and about 24 hours to deionized distilled water through which an excess of gaseous oxygen is bubbled, as measured per the Mobility-Based Zeta Potential protocol.

6. (Original) The activated carbon according to claim 1 wherein said activated carbon is derived from coal.

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7. (Original) The activated carbon according to claim 1 wherein said activated carbon removes natural organic matter.

8. (Original) The activated carbon according to claim 1 wherein said activated carbon removes methyl tert butyl ether, chlorinated organic compounds, aliphatic organic compounds, aromatic organic compounds, and/or mixtures thereof.

9-29. (Canceled)

30. (Currently amended) An activated carbon prepared by a method comprising:
heating a carbonaceous material to a temperature in the range between about 300 to 1400 °C for a period of time in the range of about 0.1 to 500 minutes, thereby forming said activated carbon then washing said activated carbon with an acid that has a molarity greater than about 10^{-4} M, then

heating acid washed activated carbon to a temperature in the range between above about 600 to about 1400 °C for a period of time between about 0.1 to 500 minutes, in the presence of at least one gas selected from the group consisting of: steam, methane, natural gas, hydrogen, nitrogen, ammonia, benzene, propane, and mixtures thereof, wherein said activated carbon comprises: a pore volume per gram of said activated carbon more than about 0.25 mL in the pore width range between about 4 to 63 angstroms; and a pore volume per gram of said activated carbon more than about 0.15 mL in the pore width range between about 63 to 500 angstroms; as measured per the Argon Adsorption Density Functional Theory protocol, provided that

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said activated carbon has a pH equal to or greater than 9.0, when immersed as a slurry in nitrogen-purged deionized distilled water, while the slurry contains about 10% by weight of activated carbon, as measured per the Slurry pH protocol;

wherein the percent volume of macropores having diameters exceeding 200 Angstroms range from about 33 % to about 50 %.

31-35. (Canceled)

36. (Currently amended) An activated carbon, comprising:

a pore volume per gram of said activated carbon more than about 0.32 mL in the pore width range between about 4 to 63 angstroms; and

a pore volume per gram of said activated carbon more than about 0.21 mL in the pore width range between about 63 to 500 angstroms; provided that the pore volume per gram of said activated carbon in the pore width range of about 20 to 63 angstroms is at least about 25% of the total pore volume per gram of said activated carbon in said pore width range of 4 to 63 angstroms, as measured per the Argon Adsorption Density Functional Theory protocol and provided that said activated carbon exhibits a pH equal to or greater than 9.9, when immersed as a slurry in nitrogen-purged deionized distilled water, while the slurry contains about 10% by weight of activated carbon, as measured per the Slurry pH protocol,

whereby said activated carbon has not been mixed with sodium hydroxide or other alkaline material;

wherein the percent volume of macropores having diameters exceeding 200 Angstroms range from about 33 % to about 50 %.

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37. (Currently amended) An activated carbon, comprising:

a pore volume per gram of said activated carbon more than about 0.32 mL in the pore width range between about 4 to 63 angstroms; and

a pore volume per gram of said activated carbon more than about 0.21 mL in the pore width range between about 63 to 500 angstroms; provided that the pore volume per gram of said activated carbon in the pore width range of about 20 to 63 angstroms is at least about 25% of the total pore volume per gram of said activated carbon in said pore width range of 4 to 63 angstroms, as measured per the Argon Adsorption Density Functional Theory protocol and provided that said activated carbon exhibits a pH equal to or greater than 9.0, when immersed as a slurry in nitrogen-purged deionized distilled water, while the slurry contains about 10% by weight of activated carbon, as measured per the Slurry pH protocol,

whereby said activated carbon has not been mixed with sodium hydroxide or other alkaline material;

wherein the percent volume of macropores having diameters exceeding 200 Angstroms range from about 33 % to about 50 %.

38. (Currently amended) An activated carbon composed of a carbonaceous material comprising:

a pore volume per gram of said activated carbon more than about 0.32 mL in the pore width range between about 4 to 63 angstroms; and

a pore volume per gram of said activated carbon more than about 0.21 mL in the pore width range between about 63 to 500 angstroms; provided that the pore volume per

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gram of said activated carbon in the pore width range of about 20 to 63 angstroms is at least about 25% of the total pore volume per gram of said activated carbon in said pore width range of 4 to 63 angstroms, as measured per the Argon Adsorption Density Functional Theory protocol and provided that said activated carbon exhibits a pH equal to or greater than 9.9, when immersed as a slurry in nitrogen-purged deionized distilled water, while the slurry contains about 10% by weight of activated carbon, as measured per the Slurry pH protocol;

wherein the percent volume of macropores having diameters exceeding 200 Angstroms range from about 33 % to about 50 %.

39. (Previously presented) The activated carbon of Claim 38, wherein said carbonaceous material is derived from coal or wood.

40. (Previously presented) The activated carbon of Claim 38, wherein said carbonaceous material has not yet been used to adsorb material selected from the group consisting of 2-methylisoborneol, geosmin, natural organic matter, methyl tert butyl ether, chlorinated organic compounds, aliphatic organic compounds, aromatic organic compounds, and mixtures thereof.

41-44. (Cancelled)